Pakistan’s Space Vision 2040, was approved by the Prime Minister of Pakistan which inter-alia included augmentation / strengthening of the Astronomy and Astrophysics program of SUPARCO. SUPARCO’s astronomy and astrophysics program is mainly focused on theoretical and observational research, for which an astronomical observatory is planned to be established. Research studies pertaining to deep space objects including galaxies, nebulae and variable stars are also being initiated. Search for earth-like planets is a hot topic in astrophysics nowadays. It is planned to conduct research studies in this field also.
EVENTS OF THE MONTH (AUGUST 2014)

August 10 - Full Moon:
The Moon will be directly opposite the Earth from the Sun and will be fully illuminated as seen from Earth. This phase occurs at 18:09 UTC. This full moon was known by early Native American tribes as the Full Sturgeon Moon because the large sturgeon fish of the Great Lakes and other major lakes were more easily caught at this time of year. This moon has also been known as the Green Corn Moon and the Grain Moon. This is also the closest and largest full Moon of the year, an annual event that has come to be known as a “supermoon” by the media. The truth is that it is only slightly larger and brighter than normal and most people are not really able to tell the difference.

August 12, 13 - Perseids Meteor Shower:
The Perseids is one of the best meteor showers to observe, producing up to 60 meteors per hour at its peak. It is produced by comet Swift-Tuttle, which was discovered in 1862. The Perseids are famous for producing a large number of bright meteors. The shower runs annually from July 17 to August 24. It peaks this year on the night of August 12 and the morning of August 13. The waning gibbous moon will block out some of the meteors this year, but the Perseids are so bright and numerous that it should still be a good show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Perseus, but can appear anywhere in the sky.
August 18 - Conjunction of Venus and Jupiter:
Conjunctions are rare events where two or more objects will appear extremely close together in the night sky. The two bright planets will come unusually close to each other, only a quarter of a degree, in the early morning sky. Also, the bee hive cluster in the constellation Cancer will be only 1 degree away. This rare, double-planet event is definitely one not to miss. Look for the bright planets in the east just before sunrise.

August 29 - Neptune at Opposition:
The blue giant planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. This is the best time to view and photograph Neptune. Due to its extreme distance from Earth, it will only appear as a tiny blue dot in all but the most powerful telescopes.
This is an asinine science book. It is a group of lyrical essays rhapsodizing in poetic, easy to understand, prose mixing science fact and selected bits of science history and lots of subjective ecstasy. In other words, a coffee table book for readers of Vogue Magazine, except that it needs more pictures and its small paperback size fits most purses. The book is perfect for the literary magazine reader who has difficulty with science subjects, or those readers of a poetic and romantic nature.

Some quotes from the book:
"The Book of Genesis tells how the dust of the ground, molded and exalted by the breath of life, became the first man. The ubiquitous dust of the early Solar System-flecks of carbon, specks of silicon, molecules of ammonia, crystals of ice-united bit by bit into "planetesimals," which were the seeds, or first stages, of planets." and so on.
Included are entire poems written about the planets. With her bestsellers Longitude and Galileo's Daughter, Dava Sobel introduced readers to her rare gift for weaving complex scientific concepts into a compelling narrative. Now Sobel brings her full talents to bear on what is perhaps her most ambitious topic to date-the planets of our solar system. Sobel explores the origins and oddities of the planets through the lens of popular culture, from astrology, mythology, and science fiction to art, music, poetry, biography, and history. Written in her characteristically graceful prose, The Planets is a stunningly original celebration of our solar system and offers a distinctive view of our place in the universe.
Astronomic Clock

ASTRONOM provides a host of data on the positions of the Sun, Moon, and planets seen from anywhere on Earth. Information plotted on an altazimuth chart and accompanying tables, includes local sunrise and sunset times, solar disk size, Earth-Sun distance, Moon phases, equatorial coordinates, a planetary ephemeris, and an eclipse locator. The positions of the planets may be changed in steps of a second, minute, hour, day, week, and month, or follow the system clock. The software is available from the Internet for a maximum of 3-month evaluation period. Min. PC requirements (dependent of OS): Pentium III 600 MHz processor, 1Gb free RAM, 50 megabytes hard-disk space, 800 x 600 true color display and a connection to the internet. Preferred OS: Windows XP/Windows 7 / Windows 8
This website is an overview of the history, mythology, and current scientific knowledge of the planets, moons and other objects in our solar system. Each page has our text and NASA's images, some have sounds and movies, most provide references to additional related information. All eight planets can be seen with a small telescope; or binoculars. And large observatories continue to provide much useful information. But the possibility of getting up close with interplanetary spacecraft has revolutionized planetary science. Very little of this site would have been possible without the space program.
Nevertheless, there's a lot that you can see with very modest equipment or even with just your own eyes. Past generations of people found beauty and a sense of wonder contemplating the night sky. Today's scientific knowledge further enhances and deepens that experience. And you can share in it by simply going out in the evening and looking up. The IAU has changed the definition of "planet" so that Pluto no longer qualifies. There are now officially only eight planets in our solar system. Of course this change in terminology does not affect what's actually out there. In the end, it's not very important how we classify the various objects in our solar system. What is important is to learn about their physical nature and their histories.

Planet Order from the Sun

- The Sun
- Mercury
- Venus
- Earth
- Mars
- Jupiter
- Saturn
- Uranus
- Neptune

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The bright stars Altair, Deneb and Vega form a prominent triangle that is well seen in August evenings from all but the most southerly latitudes. In the Northern Hemisphere, it is known as the Summer Triangle. Another major sight for northern observers is the Perseids meteor shower, visible in the mid-month.

Northern Latitudes:

**Looking North**
The big dipper (plough) is in the northwest with Arcturus to its left. The bowl of the little dipper (the Ursa Minor) is to the left of Polaris, while to the right Cassiopeia appears like a back to front latter E. Perseus is raising lower down, with Pegasus and Andromeda farther east.
Looking South
The stars of the summer triangle- Vega, Deneb, Altair- are overhead. The Milky Way runs southwest to the northeast, seems to divide in two in Cygnus. Ophiuchus and both parts of Serpens are in the west with Sagittarius and Scorpius beneath them. Aquarius and Capricornus are in the southeast.
Carbon monoxide predicts ‘red and dead’ future of gas guzzler galaxy
Astronomers have studied the carbon monoxide in a galaxy over 12 billion light years from Earth and discovered that it’s running out of gas, quite literally, and headed for a ‘red and dead’ future. The galaxy, known as ALESS65, was observed by the Atacama Large Millimeter Array (ALMA) in 2011 and is one of fewer than 20 known distant galaxies to contain carbon monoxide.

Friction from tides could help distant Earth-sized planets survive, and thrive
As anybody who has started a campfire by rubbing sticks knows, friction generates heat. Now, computer modeling by NASA scientists shows that friction could be the key to survival for some distant Earth-sized planets traveling in dangerous orbits. The findings are consistent with observations that Earth-sized planets appear to be very common in other star systems. Although heat can be a destructive force for some planets, the right amount of friction, and therefore heat, can be helpful and perhaps create conditions for habitability.

NASA Mars Orbiter views rover crossing into new zone
NASA Mars rover Curiosity has driven out of the ellipse, approximately 4 miles wide and 12 miles long (7 kilometers by 20 kilometers), that was mapped as safe terrain for its 2012 landing inside Gale Crater.
Astronomers bring the third dimension to a doomed star’s outburst

In the middle of the 19th century, the massive binary system Eta Carinae underwent an eruption that ejected at least 10 times the sun’s mass and made it the second-brightest star in the sky. Now, a team of astronomers has used extensive new observations to create the first high-resolution 3-D model of the expanding cloud produced by this outburst.

Stretching forces shaped Jupiter moon’s surface, laboratory model suggests

Processes that shaped the ridges and troughs on the surface of Jupiter’s icy moon Ganymede are likely similar to tectonic processes seen on Earth, according to a team of researchers. To arrive at this conclusion, the team subjected physical models made of clay to stretching forces that simulate tectonic action.

Planet Mercury a result of early hit-and-run collisions

New simulations show that Mercury and other unusually metal-rich objects in the solar system may be relics left behind by hit-and-run collisions in the early solar system. The origin of planet Mercury has been a difficult question in planetary science because its composition is very different from that of the other terrestrial planets and the moon.
Sun sends more ‘tsunami waves’ to Voyager 1

NASA’s Voyager 1 spacecraft has experienced a new “tsunami wave” from the sun as it sails through interstellar space. Such waves are what led scientists to the conclusion, in the fall of 2013, that Voyager had indeed left our sun’s bubble, entering a new frontier.

Something is amiss in the Universe: Cosmic accounting reveals missing light crisis

Something is amiss in the Universe. There appears to be an enormous deficit of ultraviolet light in the cosmic budget. The vast reaches of empty space between galaxies are bridged by tendrils of hydrogen and helium, which can be used as a precise ‘light meter.’ In a recent study a team of scientists finds that the light from known populations of galaxies and quasars is not nearly enough to explain observations of intergalactic hydrogen. The difference is a stunning 400 percent.

A hotspot for powerful cosmic rays, most energetic particles in the universe

An observatory found a ‘hotspot’ beneath the Big Dipper emitting a disproportionate number of the highest-energy cosmic rays. The discovery moves physics another step toward identifying the mysterious sources of the most energetic particles in the universe.
Supermassive black hole blows molecular gas out of a galaxy at one million kilometers per hour
New research has solved a long-standing mystery surrounding the evolution of galaxies, deepening our understanding of the future of the Milky Way. The supermassive black holes in the cores of some galaxies drive massive outflows of molecular hydrogen gas. As a result, most of the cold gas is expelled from the galaxies. Since cold gas is required to form new stars, this directly affects the galaxies’ evolution.

High Energy Stereoscopic System detects its first pulsar
The High Energy Stereoscopic System telescope in Namibia has detected gamma rays of only 30 Giga electron volts (GeV) from the Vela pulsar. This is the first pulsar to be detected by HESS and the second - after Crab in 2011- to be spotted by ground-based gamma ray telescopes.

Controversial clues of two ‘Goldilocks planets’ that might support life are proven false
Mysteries about controversial signals from a star considered a prime target in the search for extraterrestrial life now have been solved. The research proves, for the first time, that some of the signals actually are from events inside the star itself, not from the two so-called ‘Goldilocks planets’, which were suspected to be just-right for life and orbiting the star at a distance where liquid water potentially could exist. No planets there just star burps.
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